

**TITLE 252. DEPARTMENT OF ENVIRONMENTAL QUALITY  
CHAPTER 626. PUBLIC WATER SUPPLY CONSTRUCTION STANDARDS  
SUBCHAPTER 1. INTRODUCTION**

**252:626-1-2. Definitions**

Terms have the meaning assigned in the Environmental Quality Code. The following words or terms, when used in this Chapter, have the following meaning unless the context clearly indicates otherwise:

**"25-year flood"** means a flood event that has a 4 percent chance of being equaled or exceeded in magnitude in any given year.

**"100-year flood"** means a flood event that has a 1 percent chance of being equaled or exceeded in magnitude in any given year.

**"ANSI"** means the American National Standards Institute.

**"APHA"** means the American Public Health Association.

**"API"** means the American Petroleum Institute.

**"Approvable", "Approve", "Approved"** mean a submission to the DEQ that shall be considered a final submission, all preliminary discussions between the DEQ and the permittee regarding the requirements of a submission shall be concluded prior to the submission, so that the submission shall be deemed complete as submitted.

**"ASTM"** means the American Society for Testing Materials.

**"AWWA"** means the American Water Works Association.

**"Board"** means the Environmental Quality Board.

**"Calculated dose"** means the RED calculated using the dose-monitoring equation that was developed through validation testing.

**"Cartridge filter"** means a filter that is manufactured by placing a flat sheet membrane media between a feed and filtrate support layer and plating the assembly to increase the membrane surface area within the cartridge. The pleat pack assembly is then placed around a center core with a corresponding outer case and subsequently sealed, via adhesive or thermal means, into its cartridge configuration.

**"Certified waterworks operator"** means an operator licensed by the State of Oklahoma, pursuant to OAC 252:710.

**"CFR"** means Code of Federal Regulation.

**"Challenge test"** means a study conducted to determine the removal efficiency (i.e. log removal value [LRV]) of a membrane material for a particular organism, particulate or surrogate.

**"Clean-in place (CIP)"** means the periodic application of a chemical solution or series of solutions to a membrane unit for the intended purpose of removing accumulated foulants and restoring permeability and resistance to baseline levels, commonly used for in-situ chemical cleaning.

**"Combined distribution system"** means the interconnected distribution system consisting of the distribution systems of wholesale systems and of the consecutive systems that receive finished water.

**"Consecutive system"** means a public water supply system that receives some or all of its finished water from one or more wholesale systems. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

**"Council"** means the Water Quality Management Advisory Council.

**"CT"** means the product of "residual disinfectant concentration" (C) in mg/l, and the

corresponding "disinfectant contact time" (T) in minutes, i.e., "C" x "T". CT requirements for a variety of disinfectants and conditions appear in the EPA Guidance Manual to the Surface Water Treatment Rule.

"**CT Value**" means the product of disinfectant residual and disinfectant CT. The required amount of CT needed is contained in the EPA Guidance Manual to the Surface Water Treatment Rule.

"**DEQ**" means the Oklahoma Department of Environmental Quality.

"**Differential pressure**" means a pressure drop across a membrane module or unit from the feed inlet to concentrate outlet, as distinguished from transmembrane pressure (TMP), which represents the pressure from across the membrane barrier.

"**Direct integrity testing**" means a physical test applied to a membrane unit in order to identify and/or isolate an integrity breach.

"**Director**" or "**Executive Director**" means the Executive Director of the Oklahoma Department of Environmental Quality.

"**Effective size**" means from a particle-size distribution curve, it is the diameter where 10% of the material is finer.

"**Element**" means a term used to describe an encased spiral-wound membrane module and is synonymous with the terms module and cartridge.

"**Engineer**" means a professional engineer licensed to practice engineering in Oklahoma.

"**ETV**" means the EPA's Environmental Technical Verification Program.

"**EPA**" means the United States Environmental Protection Agency.

"**FDA**" means the United States Food and Drug Administration.

"**Flood Plain**" means the flood way and a zone of floodwater storage where water moves slowly or is ponded, thus attenuating the flood peak as the flood waters move downstream.

"**Flood way**" means the part of the flood plain considered to be the zone of highest hazard and the zone to be reserved for the passage of larger floods.

"**Flux**" means the throughput of a pressure-driven membrane filtration system expressed in terms of flow per unit of membrane area.

"**GWUDI**" means groundwater under the direct influence of surface water.

"**Hydraulic analysis**" means the study of the water system network, evaluating water flows within the distribution system under prescribed conditions, such as peak hourly flow plus fire flow when required. Hydraulic analysis includes consideration of all factors affecting system energy losses.

"**Indirect integrity monitoring**" means the monitoring of an aspect of filtered water quality, such as turbidity, that is indicative of the removal of particulate matter at a frequency of no less than once every fifteen (15) minutes.

"**Individual water system**" means a water system serving only one single-family residence.

"**Iron and manganese control**" means the treatment process designed specifically for the treatment or removal of iron and manganese.

"**Membrane unit**" means a group of membrane modules that share common valving which allows the unit to be isolated from the rest of the system for the purpose of integrity testing or other maintenance, synonymous with the terms rack, skid and train.

"**Multi-family dwelling**" means a single structure designed and suitable for use of several or many families.

"**Municipal system**" means public water supply distribution systems constructed, operated, and maintained by a municipality or trust for the benefit of such municipality.

"**mm**" means millimeter.

"**nm**" means nanometer.

"**NSF**" means the National Sanitation Foundation.

"**OAC**" means the Oklahoma Administrative Code.

"**O.S.**" means the Oklahoma Statutes.

"**OWRB**" means the Oklahoma Water Resources Board.

"**Package treatment plant**" means plants that are pre-manufactured used to treat water that do not meet conventional standards for flocculation and sedimentation.

"**Plan documents**" means reports, proposals, preliminary plans, survey and basis of design data, general and detail construction plans, profiles, specifications, and all other information pertaining to water supply planning.

"**Pitless unit**" means an assembly which extends the upper end of the well casing to above grade to prevent the entrance of contaminants into the well or potable water supply, to conduct water from the well, to protect the water from freezing or extremes of temperature and to provide fill access to the well and to parts within the well.

"**psi**" means pounds per square inch.

"**Public Water Supply (PWS) system**" means any system providing water for human consumption through pipes or other constructed conveyances, if such system has at least fifteen (15) service connections or regularly serves an average of at least twenty-five (25) individuals daily at least sixty (60) days per year, whether receiving payment for same or not. Multi-family dwellings, manufactured home communities, mobile home parks, recreational vehicle (RV) parks, and correctional facilities, which are constructed, inspected and maintained under a State or locally approved plumbing code, purchase water from a permitted water system, do not provide treatment, and do not resell water, are not classified as a Public Water Supply system.

The following are the categories of Public Water Supply systems:

(A) "**Community water system**" means any PWS system that serves at least fifteen (15) service connections used by year-round residents or regularly serves at least twenty-five (25) year-round residents.

(B) "**Non-community water system**" means any PWS system that serves an average of at least twenty-five (25) individuals at least sixty (60) days per year but is neither a community water system nor a non-transient non-community water system.

(C) "**Non-transient non-community (NTNC) water system**" means any PWS system that is not a community water system and that regularly serves at least twenty-five (25) of the same persons over six (6) months per year.

"**Purchase water system**" means any system, which purchases all of its water through a master meter and provides that water to the public.

"**Reduced pressure zone, backflow preventer**" means a device designed to prevent backflow consisting of two spring loaded check valves with an intermediate reduced pressure zone that drains to the atmosphere by a relief valve, with a reduced pressure maintained in the intermediate zone by means of a pressure differential valve.

"**Reduction Equivalent Dose (RED)**" means the UV dose derived by entering the log inactivation measured during full-scale reactor testing into the UV dose-response curve that was derived through collimated beam testing. RED values are always specific to the challenge microorganism used during experimental testing and the validation test conditions for full-scale reactor testing.

"**Required Dose**" means the UV dose in units of  $\text{mJ}/\text{cm}^2$  needed to achieve the target log

inactivation for the target pathogen.

**"Residuals"** means the sludge generated by a drinking water treatment facility.

**"Rip rap"** means a permanent, erosion resistant ground cover that consists of hard, sound durable stones, which average in weight between thirty pounds (30 lbs.) to fifty pounds (50 lbs.), with no more than twenty percent (20%) weighing less than twenty pounds (20 lbs).

**"Rural water system"** means a water system designed to provide domestic water service to an area having its major part outside of an incorporated community. This system may be organized as a trust authority, a rural water district, or non-profit water corporation.

**"Silt density index (SDI)"** means the ASTM, standard D 4189-95, *Standard Test Method for Silt Density Index of Water*. Measurements are taken by filtering a water sample through a 0.45mm flat sheet filter with a 47mm diameter at a pressure of 30 psi. The time required to collect two samples at 500 ml each is measured and the resulting data is imputed into a formula.

**"Solids contact unit"** means a combination rapid mix, floc-aggregation, and upflow sedimentation basin constructed in either a round or square configuration.

**"Standard methods for the examination of water and wastewater"** means the approval methods developed by the APHA, the AWWA and the Water Environmental Federation. The current standard methods are contained in the 20<sup>th</sup> Edition, published by the AWWA.

**"Sufficiency certification"** means to provide assurance that the integrity and capacity of an existing system will not or have not been compromised.

**"Transmembrane pressure (TMP)"** means the pressure drop across the membrane barrier.

**"UL"** means the Underwriters Laboratory.

**"Uniformity coefficient"** means from a particle-size distribution curve it is, the ratio of the 60 percent grain size to the 10 percent grain size.

**"U.S.C."** means United States Code.

**"UV"** means ultra violet.

**"UV absorbance"** means a measure of the amount of UV light that is absorbed by a substance at a specific wavelength, across a specified pathlength of substance. This measurement accounts for absorption and scattering in the medium. Standard Method 5910B details this measurement method, however, for drinking water applications, samples need not be filtered or adjusted for pH or longer pathlength cuvettes, 4 cm to 5 cm should be used instead of 1 cm cuvette.

**"UV dose"** means the UV energy per unit area incident on a surface, typically reported in units of  $\text{mJ}/\text{cm}^2$  or  $\text{J}/\text{m}^2$ . The UV dose received by a waterborne microorganism in a reactor vessel accounts for the effects on UV intensity of the absorbance of the water, absorbance of the quartz sleeves, reflection and refraction of light from the water surface and reactor walls, and the germicidal effectiveness of the UV wavelengths transmitted.

**"UV dose distribution"** means the probability distribution of UV doses that microorganisms receive in a flow-through UV reactor, typically shown in a histogram.

**"UV inactivation"** means a process by which a microorganism is rendered unable to reproduce, thereby unable to infect a host.

**"UV intensity"** means the power passing through a unit area perpendicular to the direction of propagation. UV intensity is used in the UV Disinfection Guidance Manual (UVDGM) to describe the magnitude of UV light measured by UV sensors in a reactor and with a radiometer in bench-scale UV experiments.

**"UV lamp sleeve"** means the quartz tube that houses the UV lamp. The exterior of the lamp sleeve is in direct contact with the water being treated. There is typically an air gap (approx. 1

cm) between the lamp envelope and quartz sleeve.

**"UV low-pressure lamp"** means a mercury-vapor lamp that operated at an internal pressure of 0.13 to 1.3 Pa ( $2 \times 10^{-4}$  to  $2 \times 10^{-4}$  psi) and electrical input 0.5 watts per centimeter (W/cm). This results in essentially monochromatic light output at 254 nm.

**"UV low-pressure high-output lamp"** means a low-pressure mercury-vapor lamp that operates under increased electrical input (1.5 to 10 W/cm), resulting in a higher UV intensity than low-pressure lamps. This results in essentially monochromatic light output at 254 nm.

**"UV medium-pressure lamp"** means a mercury-vapor lamp that operates at an internal pressure of 1.3 to 13,000 Pa (2 to 200 psi) and electrical input of 50 to 150 W/cm. This results in a polychromatic (or broad spectrum) output of UV and visible light at multiple wavelengths, including wavelengths in the germicidal range.

**"UV off-line chemical clean"** means a process to clean lamp sleeves where the UV reactor is taken off-line and a cleaning solution (typically weak acid) is sprayed into the reactor through a service port.

**"UV off specification"** means a UV facility that is operating outside of the validated operating conditions (e.g. at a flow rate higher than the validated range or UVT below the validated range).

**"UV on-line mechanical clean"** means a process to clean lamp sleeves where an automatic mechanical wiper (e.g. o-ring) wipes the surface of the lamp sleeve at a prescribed frequency.

**"UV on-line mechanical-chemical clean"** means a process to clean lamp sleeves where an automatic mechanical wiper (e.g. o-ring) with a chemical solution located within the cleaning mechanism wipes the surface of the lamp sleeve at a prescribed frequency.

**"UV sensor"** means a photosensitive detector used to measure the UV intensity at a point within the UV reactor that converts the signal to units of milliamps (mA).

**"UV transmittance (UVT)"** means a measure of the fraction of incident light transmitted through a material. The UV transmittance is usually reported for a wavelength of 254 nm and a pathlength of 1 cm. If an alternate pathlength is used, it shall be specified or converted to units of  $\text{cm}^{-1}$ . UV transmittance is often represented as a percentage and is related to the UV absorbance ( $A_{254}$ ) by the following equation (for a 1 cm path length): % UV transmittance =  $100 \times 10^{-A}$  where A is UV absorbance.

**"Validated dose"** means the UV dose in units of  $\text{mJ}/\text{cm}^2$  delivered by the UV reactor is determined through validation testing. The validated dose is compared to the required dose to determine log inactivation credit.

**"Water line extension"** means an extension of an existing permitted water distribution line.

**"WEF"** means the Water Environmental Federation, formerly known as the WPCF.

**"Wholesale system"** means a public water supply system that treats source water as necessary to produce finished water and then delivers finished water to another public water supply system. Delivery may be through a direct connection or through the distribution system of one or more consecutive systems.

**"WQA"** means the Water Quality Association.

**"WTP"** means Water Treatment Plant.